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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/911,811	07/24/2001	Ulrich Hetzer	P01,0236	6272

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EXAMINER

LIANG, LEONARD S

ART UNIT	PAPER NUMBER
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2853

DATE MAILED: 08/06/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/911,811

Applicant(s)

HETZER ET AL.

Examiner

Leonard S Liang

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 23 May 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-24 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-24 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 24 July 2001 is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

DETAILED ACTION

Specification and Drawings

1. The lengthy specification and drawings have not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification and drawings.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

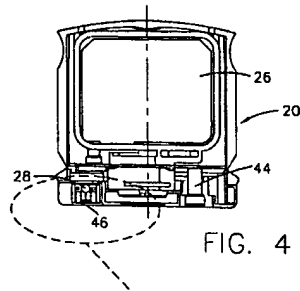
(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1-4, 6-8, 10-17, and 20-22, and 24 are rejected under 35 U.S.C. 102(b) as being anticipated by Bullock et al (US Pat 5812156).

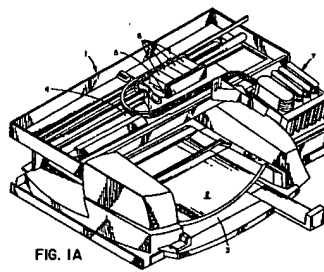
Bullock et al discloses:

- {claim 1} An ink cartridge (figure 4, reference 20)

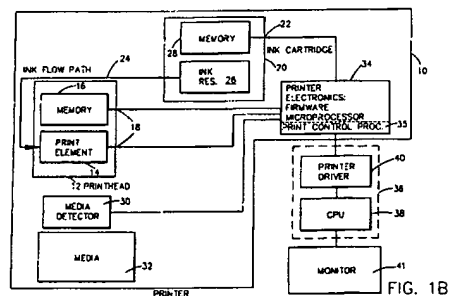
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having an ink jet printhead (figure 1A, reference 6)



and a drive unit (figure 1B, reference 40)



connected to the ink jet printhead for heating, measuring a temperature of, and driving the ink jet printhead (column 4, lines 1-13); control unit (figure 1B, reference 38); first and second memory areas (abstract; column 3, lines 1-44; column 4, lines 14-67; ink supply value, drop volume parameter, temperature sense resistor calibration data, firing energy parameters, and print mode coefficients are examples of warm-up data); a sensor for measurement of ambient temperature (column 4, lines 4-6); the control unit being programmed to

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implement at least one measurement of the ambient temperature with the sensor, and to determine warmup data for a fast start for a current warmup cycle dependent upon the ambient temperature and dependent on the at least one predetermined condition (abstract; column 4, lines 4-17; Bullock et al teaches “cartridge memory 28 and printhead memory 16 enable microprocessor 34 to calculate control values which enable printer 1 to maintain high quality print media output. This teaching demonstrates warmup data for a fast start for a current warmup cycle as a means for the printer to maintain high quality print output)

- {claim 2} second memory (figure 1B, reference 28; column 4, lines 14-67)
- {claim 3} serial number (column 4, line 41)
- {claim 4} manufacture identification number (column 4, line 25)
- {claim 6} the memory is disposed on the ink cartridge and wherein the second memory area additionally contains identification data uniquely identifying the ink cartridge and data representing further predetermined conditions allocated to the identification data, and wherein the control unit is programmed to interrogate the memory to execute the data followup employing the further predetermined conditions allocated to the identification data (figure 1B, 4, reference 28; column 2, lines 27-32; column 4, lines 1-67)
- {claim 7} serial number (column 4, line 41)
- {claim 8} manufacture identification number (column 4, line 25)

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- {claim 10} the drive unit includes a sensor for measuring the temperature of the ink jet printhead, the sensor generating sensor data representing the temperature, and wherein the control unit is programmed to interrogate the sensor data via the drive unit for determining the warmup data (column 4, lines 4-17; column 6, lines 49-52)
- {claim 11} user interface (figure 1B, reference 38; column 2, lines 14-17; column 3, lines 1-8; The teaching “When a printing operation is initiated...” naturally suggests user interface); communications link (figure 1B, reference 38; column 3, lines 1-8; column 4, user is identified by CPU as one who initiates print operation and installs cartridge)
- {claim 12} date clock module (column 4, lines 36-38, 49, 57; column 5, lines 2-4; manufacture day/year and usage time naturally suggests date clock module)
- {claim 13} storing warmup data and data representing a first condition in a memory of an apparatus employing an ink jet printhead upon installation of an ink cartridge for the ink jet printhead in the apparatus, before a first use of the newly installed ink cartridge (column 2, lines 10-38); accumulating and storing parameter data for second conditions for a fast start of the ink jet print head during repeated use of the ink jet printhead (column 2, lines 10-38; column 4); determining warmup data for the second conditions from the parameter data and employing the warmup data for the second conditions in at least one warmup cycle of the ink jet printhead (column 2, lines 10-38; column 4)

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- {claim 14} storing the parameter data in a table (figure 6); electronically accessing the table to retrieve the parameter data therefrom and determining the warmup data from the retrieved data (column 3, lines 35-44; column 2, lines 9-38)
- {claim 15} computational algorithm (column 6, lines 21-54)
- {claim 16} the step of accumulating and storing parameter data comprises accumulating and storing parameter data representing use of the ink cartridge, and wherein the second conditions comprise temperature-related data and history-related data, and wherein the step of determining the warmup data comprises determining the warmup data dependent on the parameter representing use, the temperature-related data and the history-related data (column 4; column 2, lines 9-38)
- {claim 17} the additional step of entering a user-selected parameter into the apparatus, and wherein the second conditions comprise temperature-related data and user-related data, and wherein the step of determining the warmup data comprises determining the warmup data from the parameter entered by the user, the temperature-related data and the user-related data (column 2, lines 9-38; column 4; user replacing cartridge is equivalent to user inputting a user-selected parameter because parameters and warm-up data will vary according to type of cartridge input)
- {claim 20} uniquely allocating identification data to the ink cartridge (column 4); before each use of the ink cartridge, interrogating the identification data and

checking the identification data to authenticate the identification data (column 2, lines 9-38; column 3, lines 36-44; interrogating and checking identification data occurs constantly); determining the warmup data for the fast start according to a first procedure if the ink cartridge is authenticated and according to a second procedure if the ink cartridge is not authenticated (inherent; Bullock et al teaches replaceable printheads, and parameter adjustment based on the printhead. If a printhead is authenticated, the parameters will remain the same, but if the printhead is replaced, the new printhead won't be immediately authenticated based on the old parameters; new parameters will respond to the new printhead according to a new procedure)

- {claim 21} the second conditions comprise data representing ambient temperature, data representing temperature of the ink jet print head, a first parameter dependent on use of the ink cartridge, and a user-entered second parameter indicating selection of a shortened warmup cycle (column 4; warmup cycle time is dependent on the temperature sense resistor calibration data; as the user enters a new printer cartridge, this temperature data will change, thus the user can input a parameter indicating selection of a shortened warmup cycle)
- {claim 22} the ink cartridge is a first ink cartridge, and comprising the additional steps of providing a second ink cartridge in the apparatus and determining different warmup data for the second ink cartridge, and operating the first ink cartridge in the warmup cycle with the warmup data and operating the second ink

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cartridge in the warmup cycle with the different warmup data (column 2, lines 10-38)

- {claim 24} the drive unit comprises a drive unit sensor for measuring the temperature of the ink jet printhead (column 4, lines 4-7)

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 5 and 9 rejected under 35 U.S.C. 103(a) as being unpatentable over Bullock et al (US Pat 5812156) in view of Berson (US Pat 5513563).

Bullock et al discloses:

- {claim 1} An arrangement for data follow-up for a warmup cycle of an ink jet printhead (as taught in claim 1)
- {claims 5 and 9} serial number and manufacture identification number (column 4, lines 25, 41)

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Bullock et al differs from the claimed invention in that it does not disclose:

- {claims 5 and 9} the control unit comprises a security module for forming a code word by encryption of the serial number and the manufacture identification number, and wherein the control unit stores the code word in the second memory as at least a portion of the identification data

Berson discloses:

- encrypting serial number (column 3, lines 18-22)

It would have been obvious to one having ordinary skill in the art at the time the invention was made to incorporate the teachings of Berson into the invention of Bullock et al so that serial numbers could be encrypted. The motivation for the skilled artisan in doing so is to gain the benefit of providing verifiable security (column 1, lines 46-47). The combination naturally suggests encrypting manufacture identification numbers and the control unit storing the code word in the second memory as at least a portion of the identification data.

4. Claims 18-19 and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bullock et al (US Pat 5812156) in view of Hirabayashi et al (US Pat 5477246).

Bullock et al discloses:

- {claim 13} A method for determining data for a warmup cycle of an ink jet printhead (as taught in claim 13)
- {claim 18} voltage pulse having a pulse amplitude and a pulse duration (inherent)
- {claim 19} temperature-related data, history-related data, user-related data (column 4); voltage pulse having a pulse amplitude and duration (inherent)

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- {claim 23} first ink cartridge with a first voltage pulse having a pulse amplitude and a pulse duration; second ink cartridge with a second pulse having a pulse duration and a pulse amplitude (inherent)

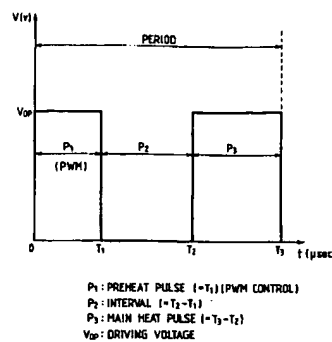
Bullock et al differs from the claimed invention in that it does not disclose:

- {claim 18} modifying the pulse amplitude in the warmup cycle and maintaining the pulse duration at a constant value during the warmup cycle, the constant value being shorter than a pulse duration when operating the ink jet printhead for printing
- {claim 19} modifying the pulse amplitude during the warmup cycle dependent on the temperature-related data and the history-related data, and modifying the pulse duration during the warmup cycle dependent on the user-related data
- {claim 23} modifying the pulse duration of one of the first pulse and the second pulse, while maintaining the pulse amplitude of the first pulse and the second pulse equal

Hirabayashi et al discloses:

- {claim 18} modifying the pulse amplitude in the warmup cycle and maintaining the pulse duration at a constant value during the warmup cycle, the constant value being shorter than a pulse duration when operating the ink jet printhead for printing (figure 9; column 11, lines 30-53)

FIG. 9



- {claim 19} modifying the pulse amplitude during the warmup cycle dependent on the temperature-related data and the history-related data, and modifying the pulse duration during the warmup cycle dependent on the user-related data (column 11, lines 30-53; Hirabayashi et al teaches that pulse amplitude is determined by area, resistance, and film structure of the H.B., and the nozzle structure of the head, while pulse widths are determined by the area resistance, and film structure of the H.B., the nozzle structure of the head, and the inks physical properties. Thus amplitude is dependent on temperature related data (heater board energy; column 11, lines 30-32) and pulse duration (i.e. width) is dependent on user-related data (i.e. ink's physical properties; user can choose type of ink cartridge to use; column 11, lines 50-53)
- {claim 23} modifying the pulse duration of one of the first pulse and the second pulse, while maintaining the pulse amplitude of the first pulse and the second pulse equal (column 11, lines 30-53; Hirabayashi et al teaches that pulse amplitude is determined by area, resistance, and film structure of the H.B., and the nozzle structure of the head, while pulse widths are determined by the area

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resistance, and film structure of the H.B., the nozzle structure of the head, and the inks physical properties. Therefore it is possible to modify pulse duration while maintaining pulse amplitude by modifying an inks physical properties)

It would have been obvious to one having ordinary skill in the art at the time the invention was made to incorporate the teachings of Hirabayashi et al into the invention of Bullock et al so that there is modifying of the pulse amplitude in the warmup cycle and maintaining of the pulse duration at a constant value during the warmup cycle wherein the constant value is shorter than a pulse duration when operating the ink jet printhead for printing; modifying of the pulse amplitude during the warmup cycle dependent on the temperature-related data and the history-related data; and modifying the pulse duration during the warmup cycle dependent on the user-related data and there is modifying of the pulse duration of one of the first pulse and the second pulse, while maintaining the pulse amplitude of the first pulse and the second pulse equal. The motivation for the skilled artisan in doing so is to gain the benefit of controlling ink temperature in nozzles and ejecting ink droplets from nozzle orifices (column 11, lines 30-48). The combination naturally suggests replacing ink cartridges with different ink properties so that the pulse duration is modified while the pulse amplitude is maintained. The combination also naturally suggests having the pulse amplitude dependent on history-related data (in view of Bullock et al column 4).

Response to Arguments

5. Applicant's arguments filed on 05/23/03 have been fully considered but they are not persuasive.

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The applicant argues that Bullock et al does not disclose warm-up values. Specifically, the applicant argues that the examiner user language improper for a rejection under U.S.C. 102, such as “implies” and “naturally suggested”. The applicant states “There is nothing in the statement cited by the Examiner that necessarily teaches that warm-up values are, or even can be, included in the factory-written and printer-data values...” The examiner admits that the language used in the rejection may not be fully appropriate. However, the examiner contends that despite any language used, Bullock et al does fully disclose the limitations of the applicant’s claimed invention. Perhaps a better word that could have been used besides “implies” or “naturally suggested” is inherent. Based on the teachings of Bullock et al, one of ordinary skill in the art would find the warm-up data and warm-up cycle inherent to the invention. Specifically, one of ordinary skill in the art would recognize that factory-written and printer-recorded data values such as drop volume measurement, temperature sense resistor calibration data, and firing energy parameters represent information that is essential to the initiation (i.e. warm-up) of a printer. Bullock et al specifically discloses initiating a printing operation (column 3, lines 1-2), and it is inherent to the invention that such a printing operation would be impossible to implement without the disclosed data in the memories. Furthermore, Bullock et al clearly gives an example of detecting warm-up data by teaching “The processor is thus able (in the case of an ink jet printing system) to determine a current ink supply value from a cumulative usage value stored on the cartridge memory and a drop volume parameter stored on the printhead memory. Further, a drop volume parameter stored on the printhead memory can be adjusted to accommodate a media type sensed by a media sensor” (abstract). The printer could not properly initiate printer operation without knowing the ink supply volume and drop volume. Bullock et al

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discloses adjusting these values based on a particular media type sensed. It is obvious that this sensing of the media, and thus the associated data detecting, would be at the beginning of the printer warm-up cycle; if this were not the case, printing operation would be disrupted by the mid-print adjustment of the drop volume parameter. Thus, it should be clear that despite whatever language the examiner used in the previous rejection, Bullock et al does indeed disclose the claimed rejection and thus the prior rejection was proper.

The applicant further argues that Bullock et al discloses printhead temperature, but does not disclose the claimed “ambient” temperature. The applicant argues that the invention of Bullock differs greatly from that of the applicant’s invention and cites examples from the applicant’s specification to support this claim. However, the examiner believes that the applicant is trying to read limitations from the specification into the claimed invention in order to improperly narrow the definition of the word “ambient”. Based on the applicant’s specification, the examiner believes that the applicant is referring to “ambient” temperature as the temperature of the environment, and thus distinguishing that temperature from the “printhead” temperature. However, in the Merriam-Webster’s Collegiate Dictionary Tenth Edition, ambient is defined as nothing more than “existing or present on all sides” (page 36). Based on this definition, it is clear that the sensor disclosed by Bullock et al not only measures the temperature of the printhead, but also measures the “ambient” temperature as well, since the printhead inherently creates a heating zone around itself.

The above rejection and responses to argument address all other issues raised by the applicant’s response.

Conclusion

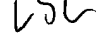
6. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).


A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Leonard S Liang whose telephone number is (703) 305-4754. The examiner can normally be reached on 8:30-5 Monday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephen Meier can be reached on (703) 308-4896. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 308-7724 for regular communications and (703) 308-7724 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

lsl 
July 28, 2003


Stephen D. Meier
Primary Examiner